

H1463

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RECEIVED
JUN 10 2002

Date: 29 October 2001
To: Bechtel Hanford, Inc. (technical representative)
From: TechLaw, Inc.
Project: 100 F Areas - Full Protocol/Waste Site UPR-100-F-2
Subject: Radiochemistry - Data Package No. H1463-ES (SDG No. H1463)

EDMC

INTRODUCTION

This memo presents the results of data validation on Summary Data Package No. H1463-ES which was prepared by Eberline Services (ES). A list of samples validated along with the analyses reported and the requested analytes is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analysis
B12KW5	8/16/01	Soil	C	Gamma Spectroscopy
B12KW6	8/16/01	Soil	C	Gamma Spectroscopy
B12KW7	8/16/01	Soil	C	Gamma Spectroscopy
B12KW8	8/16/01	Soil	C	Gamma Spectroscopy
B12KW9	8/16/01	Soil	C	Gamma Spectroscopy
B12KX0	8/16/01	Soil	C	Gamma Spectroscopy
B12KX1	8/16/01	Soil	C	Gamma Spectroscopy
B12KX2	8/16/01	Soil	C	Gamma Spectroscopy
B12KX3	8/16/01	Soil	C	Gamma Spectroscopy
B12KX4	8/16/01	Soil	C	Gamma Spectroscopy
B12KX5	8/16/01	Soil	C	Gamma Spectroscopy
B12KX6	8/16/01	Soil	C	Gamma Spectroscopy
B12KX7	8/16/01	Soil	C	Gamma Spectroscopy
B12KX8	8/16/01	Soil	C	Gamma Spectroscopy

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL May 1998). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers

Appendix 2. Summary of Data Qualification

Appendix 3. Qualified Data Summary and Annotated Laboratory Reports

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Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation

Appendix 5. Data Validation Supporting Documentation

Appendix 6. Additional Data Requested by Client

DATA QUALITY PARAMETERS

• Holding Times

Holding times are calculated from Chain-of-Custody forms to determine the validity of the results. The maximum holding time for radiochemical analysis is 6 months.

All holding times were acceptable.

• Preparation (Method) Blanks

Laboratory Blanks

Blank samples are analyzed to determine if positive results are due to laboratory reagent, sample container, or detector contamination. If blank analysis results indicate the presence of an analyte above the minimum detectable activity (MDA), the following qualifiers are applied: All positive sample results less than five times the highest blank concentration are qualified as estimates and flagged "J"; sample results below the MDA are qualified as undetected and flagged "U"; sample results above the MDA and greater than five times the highest blank concentration are not qualified.

All blank results were acceptable.

Field Blank

One field blank (B12KX8) was submitted for review. No analytes were detected in the field blank

• Accuracy

Accuracy is evaluated from laboratory control sample (LCS) or blank spike sample (BSS) batch samples and spiked samples from the analytical batch. Measured activities are compared to the known added amounts. The acceptable LCS or BSS and matrix spike (MS) recovery range is ± 3 sigma. In addition, samples may be spiked with a radiochemical tracer to assist in isolating the radioisotope of interest with the yield of the tracer being used in calculating sample activity. The acceptable range for tracer recovery is 20% to

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105%. Spike sample results outside the above ranges result in associated sample results being qualified as estimates, or not qualified, depending on the activity of the individual sample. Results are rejected for LCS/BSS recoveries of less than ± 3 sigma, tracer recoveries of less than 20%, and tracer recoveries of greater than 115% for detected results.

All accuracy results were acceptable.

- **Laboratory Duplicates**

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the contract required detection limit (CRDL) and the RPD is less than 30%, no qualification is required. If either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

All duplicate results were acceptable.

Field Duplicate

One set of field duplicates (B12KX7/B12KW5) was submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Detection Levels**

Reported analytical detection levels for undetected analytes are compared against the 100 Area Remedial Action Sampling and Analysis Plan target detection limits (TDLs) to ensure that laboratory detection levels meet the required criteria. The following analytes were reported above their TDL: Cobalt-60 in samples B12KW5, B12KW6, B12KW7, B12KX5, B12KX6, and B12KX7; cesium-137 in samples B12KW5, B12KW6 and B12KX7; europium-152 in samples B12KW6, B12KX3, B12KX6 and B12KX7; europium-154 in samples B12KW5, B12KW6, B12KW7, B12KW8, B12KW9, B12KX2, B12KX3, B12KX5, B12KX6 and B12KX7; and europium-155 in samples B12KW6, B12KW7, B12KW8, B12KX3, B12KX5 and B12KX7. Under the BHI statement of work, no qualification is required. All other reported laboratory MDAs were at or below the analyte-specific TDL or contract specified MDA.

- **Completeness**

Data package No. H1463-ES (SDG No. H1463) was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following analytes were reported above their TDL: Cobalt-60 in samples B12KW5, B12KW6, B12KW7, B12KX5, B12KX6, and B12KX7; cesium-137 in samples B12KW5, B12KW6 and B12KX7; europium-152 in samples B12KW6, B12KX3, B12KX6 and B12KX7; europium-154 in samples B12KW5, B12KW6, B12KW7, B12KW8, B12KW9, B12KX2, B12KX3, B12KX5, B12KX6 and B12KX7; and europium-155 in samples B12KW6, B12KW7, B12KW8, B12KX3, B12KX5 and B12KX7.

REFERENCES

BHI, MRB-SBB-A23665, *Validation Statement of Work*, Bechtel Hanford Incorporated, September 5, 1997.

DOE/RL-96-22, Rev. 2, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, Sept. 2000.

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Appendix 1
Glossary of Data Reporting Qualifiers

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Qualifiers which may be applied by data validators in compliance with the BHI statement of work are as follows:

- U** - Indicates the compound or analyte was analyzed for and not detected above the minimum detectable activity (MDA) in the sample. The value reported is the sample result corrected for sample dilution and moisture content by the laboratory. The data is usable for decision making purposes.
- UJ** - Indicates the compound or analyte was analyzed for and not detected at concentrations above the minimum detectable activity (MDA) in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate, but is usable for decision making purposes.
- J** - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.
- R** - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.
- UR** - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

Appendix 2
Summary of Data Qualification

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DATA QUALIFICATION SUMMARY

SDG: H1463	REVIEWER: TLI	DATE: 10/29/01	PAGE <u>1</u> OF <u>1</u>
COMMENTS: No qualifiers assigned.			

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Appendix 3
Qualified Data Summary and Annotated Laboratory Reports

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RADIOCHEMISTRY ANALYSIS, SOIL MATRIX, (PCI/G)

Page 1 of 1

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize potential miss-interpretation of results. All other qualifiers shown were applied during validation.

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H1463

R108095-01

B12KWS

DATA SHEET

SDG <u>7056</u>	Client/Case no <u>Hanford</u>	SDG <u>H1463</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R108095-01</u>	Client sample id <u>B12KWS</u>	
Dept sample id <u>7056-001</u>	Location/Matrix <u>UPR-100-F-2</u>	<u>SOLID</u>
Received <u>08/21/01</u>	Collected/Weight <u>08/16/01 07:24</u>	<u>1085 g</u>
% solids <u>96.3</u>	Custody/SAF No <u>B00-030-010</u>	<u>B00-030</u>

ANALYTE	CAS NO	RESULT pCi/g	2 σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Cobalt 60	10198-40-0	U		<u>0.059</u>	0.050	U	GAM
Cesium 137	10045-97-3	U		<u>0.084</u>	0.10	U	GAM
Europium 152	14683-23-9	0.259	0.066	<u>0.090</u>	0.10		GAM
Europium 154	15585-10-1	U		<u>0.19</u>	0.10	U	GAM
Europium 155	14391-16-3	U		<u>0.091</u>	0.10	U	GAM

100 F Area - Full Protocol

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Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-D6</u>
Version <u>3.06</u>
Report date <u>09/11/01</u>

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EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H1463

R108095-02

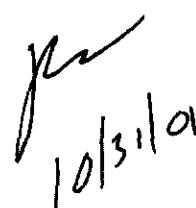
B12KW6

DATA SHEET

<u>SDG 7056</u>	<u>Client/Case no Hanford</u>	<u>SDG H1463</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R108095-02</u>	Client sample id <u>B12KW6</u>	
Dept sample id <u>7056-002</u>	Location/Matrix <u>UPR-100-F-2</u>	<u>SOLID</u>
Received <u>08/21/01</u>	Collected/Weight <u>08/16/01 07:33</u>	<u>1111 g</u>
% solids <u>92.2</u>	Custody/SAF No <u>B00-030-010</u>	<u>B00-030</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Cobalt 60	10198-40-0	U		0.057	0.050	U	GAM
Cesium 137	10045-97-3	U		0.055	0.10	U	GAM
Europium 152	14683-23-9	U		0.14	0.10	U	GAM
Europium 154	15585-10-1	U		0.21	0.10	U	GAM
Europium 155	14391-16-3	U		0.15	0.10	U	GAM

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Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
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Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>09/11/01</u>

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EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H1463

R108095-03

B12KW7

DATA SHEET

SDG <u>7056</u>	Client/Case no <u>Hanford</u>	<u>SDG H1463</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R108095-03</u>	Client sample id <u>B12KW7</u>	
Dept sample id <u>7056-003</u>	Location/Matrix <u>UPR-100-F-2</u>	<u>SOLID</u>
Received <u>08/21/01</u>	Collected/Weight <u>08/16/01 07:48</u>	<u>1406 g</u>
% solids <u>94.0</u>	Custody/SAF No <u>B00-030-010</u>	<u>B00-030</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Cobalt 60	10198-40-0	U		<u>0.056</u>	0.050	U	GAM
Cesium 137	10045-97-3	0.062	0.035	0.039	0.10	J	GAM
Europium 152	14683-23-9	0.552	0.064	0.073	0.10		GAM
Europium 154	15585-10-1	U		<u>0.12</u>	0.10	U	GAM
Europium 155	14391-16-3	U		<u>0.11</u>	0.10	U	GAM

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Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
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Version <u>3.06</u>
Report date <u>09/11/01</u>

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EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H1463

R108095-04

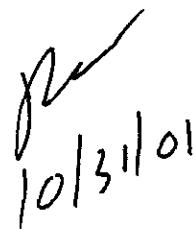
B12KWB

DATA SHEET

SDG 7056	Client/Case no Hanford	SDG H1463
Contact Melissa C. Mannion	Contract No. 630	
Lab sample id R108095-04	Client sample id B12KWB	
Dept sample id 7056-004	Location/Matrix UPR-100-F-2	SOLID
Received 08/21/01	Collected/Weight 08/16/01 07:54	1421 g
% solids 97.9	Custody/SAF No B00-030-010	B00-030

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Cobalt 60	10198-40-0	U		0.042	0.050	U	GAM
Cesium 137	10045-97-3	U		0.037	0.10	U	GAM
Europium 152	14683-23-9	0.100	0.056	0.079	0.10		GAM
Europium 154	15585-10-1	U		0.14	0.10	U	GAM
Europium 155	14391-16-3	U		0.12	0.10	U	GAM

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DS
Version 3.06
Report date 09/11/01

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H1463

R108095-05

B12KW9

DATA SHEET

SDG <u>7056</u>	Client/Case no <u>Hanford</u>	SDG <u>H1463</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R108095-05</u>	Client sample id <u>B12KW9</u>	
Dept sample id <u>7056-005</u>	Location/Matrix <u>UPR-100-F-2</u>	<u>SOLID</u>
Received <u>08/21/01</u>	Collected/Weight <u>08/16/01 08:10</u>	<u>1675 g</u>
% solids <u>98.4</u>	Custody/SAF No <u>B00-030-010</u>	<u>B00-030</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Cobalt 60	10198-40-0	U		0.036	0.050	U	GAM
Cesium 137	10045-97-3	0.091	0.029	0.035	0.10	J	GAM
Europium 152	14683-23-9	0.274	0.054	0.072	0.10		GAM
Europium 154	15585-10-1	U		<u>0.12</u>	0.10	U	GAM
Europium 155	14391-16-3	U		0.076	0.10	U	GAM

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Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>09/11/01</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H1463

R108095-06

B12KX0

DATA SHEET

SDG 7056	Client/Case no Hanford	SDG H1463
Contact Melissa C. Mannion	Contract No. 630	
Lab sample id R108095-06	Client sample id B12KX0	
Dept sample id 7056-006	Location/Matrix UPR-100-E-2	SOLID
Received 08/21/01	Collected/Weight 08/16/01 08:24 1387 g	
% solids 98.1	Custody/SAF No B00-030-010	B00-030

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Cobalt 60	10198-40-0	0.086	0.016	0.017	0.050		GAM
Cesium 137	10045-97-3	0.351	0.021	0.022	0.10		GAM
Europium 152	14683-23-9	1.48	0.040	0.041	0.10		GAM
Europium 154	15585-10-1	0.196	0.058	0.064	0.10		GAM
Europium 155	14391-16-3	U		0.058	0.10	U	GAM

100 F Area - Full Protocol

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DS
Version 3.06
Report date 09/11/01

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H1463

R108095-07

B12KK1

DATA SHEET

<u>SDG 7056</u>	<u>Client/Case no Hanford</u>	<u>SDG H1463</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 630</u>	
Lab sample id <u>R108095-07</u>	Client sample id <u>B12KK1</u>	
Dept sample id <u>7056-007</u>	Location/Matrix <u>UPR-100-F-2</u>	<u>SOLID</u>
Received <u>08/21/01</u>	Collected/Weight <u>08/16/01 08:33</u>	<u>1685 g</u>
% solids <u>99.1</u>	Custody/SAF No <u>B00-030-010</u>	<u>B00-030</u>

ANALYTE	CAS NO	RESULT pCi/g	2 σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Cobalt 60	10198-40-0	U		0.029	0.050	U	GAM
Cesium 137	10045-97-3	U		0.028	0.10	U	GAM
Europium 152	14683-23-9	U		0.094	0.10	U	GAM
Europium 154	15585-10-1	U		0.10	0.10	U	GAM
Europium 155	14391-16-3	U		0.062	0.10	U	GAM

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Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
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Version <u>3.06</u>
Report date <u>09/11/01</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H1463

R108095-08

B12KX2

DATA SHEET

SDG <u>7056</u>	Client/Case no <u>Hanford</u>	SDG <u>H1463</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R108095-08</u>	Client sample id <u>B12KX2</u>	
Dept sample id <u>7056-008</u>	Location/Matrix <u>UPR-100-F-2</u>	<u>SOLID</u>
Received <u>08/21/01</u>	Collected/Weight <u>08/16/01 08:41</u>	<u>1555 g</u>
% solids <u>99.1</u>	Custody/SAF No <u>B00-030-010</u>	<u>B00-030</u>

ANALYTE	CAS NO	RESULT pCi/g	2 σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Cobalt 60	10198-40-0	U		0.049	0.050	U	GAM
Cesium 137	10045-97-3	U		0.047	0.10	U	GAM
Europium 152	14683-23-9	0.138	0.062	0.085	0.10		GAM
Europium 154	15585-10-1	U		0.15	0.10	U	GAM
Europium 155	14391-16-3	U		0.082	0.10	U	GAM

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Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
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Version <u>3.06</u>
Report date <u>09/11/01</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H1463

R108095-09

B12KX3

DATA SHEET

SDG <u>7056</u>	Client/Case no <u>Hanford</u>	SDG H1463
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R108095-09</u>	Client sample id <u>B12KX3</u>	
Dept sample id <u>7056-009</u>	Location/Matrix <u>UPR-100-F-2</u>	<u>SOLID</u>
Received <u>08/21/01</u>	Collected/Weight <u>08/16/01 09:15</u>	<u>1650 g</u>
% solids <u>98.6</u>	Custody/SAF No <u>B00-030-010</u>	<u>B00-030</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Cobalt 60	10198-40-0	U		0.049	0.050	U	GAM
Cesium 137	10045-97-3	U		0.050	0.10	U	GAM
Euroium 152	14683-23-9	U		<u>0.12</u>	0.10	U	GAM
Euroium 154	15585-10-1	U		<u>0.18</u>	0.10	U	GAM
Euroium 155	14391-16-3	U		<u>0.13</u>	0.10	U	GAM

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Lab id <u>TMANG</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>09/11/01</u>

E B E R L I N E S E R V I C E S / R I C H M O N D
SAMPLE DELIVERY GROUP H1463

R108095-10

B12KK4

D A T A S H E E T

SDG <u>7056</u>	Client/Case no <u>Hanford</u>	SDG H1463
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R108095-10</u>	Client sample id <u>B12KK4</u>	
Dept sample id <u>7056-010</u>	Location/Matrix <u>UPR-100-F-2</u>	<u>SOLID</u>
Received <u>08/21/01</u>	Collected/Weight <u>08/16/01 09:09</u>	<u>1484 g</u>
% solids <u>99.0</u>	Custody/SAF No <u>B00-030-010</u>	<u>B00-030</u>

ANALYTE	CAS NO	RESULT pCi/g	2 σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Cobalt 60	10198-40-0	U		0.030	0.050	U	GAM
Cesium 137	10045-97-3	U		0.029	0.10	U	GAM
Europium 152	14683-23-9	0.134	0.052	0.069	0.10		GAM
Europium 154	15585-10-1	U		0.094	0.10	U	GAM
Europium 155	14391-16-3	U		0.085	0.10	U	GAM

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Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>09/11/01</u>

E B E R L I N E S E R V I C E S / R I C H M O N D
SAMPLE DELIVERY GROUP H1463

R108095-11

B12KX5

D A T A S H E E T

SDG <u>7056</u>	Client/Case no <u>Hanford</u>	SDG <u>H1463</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R108095-11</u>	Client sample id <u>B12KX5</u>	
Dept sample id <u>7056-011</u>	Location/Matrix <u>UPR-100-F-2</u>	<u>SOLID</u>
Received <u>08/21/01</u>	Collected/Weight <u>08/16/01 09:00</u>	<u>1560 g</u>
% solids <u>98.9</u>	Custody/SAF No <u>B00-030-010</u>	<u>B00-030</u>

ANALYTE	CAS NO	RESULT pCi/g	2 σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Cobalt 60	10198-40-0	U		<u>0.066</u>	0.050	U	GAM
Cesium 137	10045-97-3	0.101	0.038	<u>0.046</u>	0.10		GAM
Europium 152	14683-23-9	0.566	0.070	<u>0.082</u>	0.10		GAM
Europium 154	15585-10-1	U		<u>0.14</u>	0.10	U	GAM
Europium 155	14391-16-3	U		<u>0.12</u>	0.10	U	GAM

100 F Area - Full Protocol

10/31/01

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000021

Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>09/11/01</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H1463

R108095-12

B12KX6

DATA SHEET

SDG <u>7056</u>	Client/Case no <u>Hanford</u>	SDG <u>H1463</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R108095-12</u>	Client sample id <u>B12KX6</u>	
Dept sample id <u>7056-012</u>	Location/Matrix <u>UPR-100-F-2</u>	<u>SOLID</u>
Received <u>08/21/01</u>	Collected/Weight <u>08/16/01 08:52</u>	<u>1180 g</u>
% solids <u>99.2</u>	Custody/SAF No <u>B00-030-010</u>	<u>B00-030</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Cobalt 60	10198-40-0	U		0.051	0.050	U	GAM
Cesium 137	10045-97-3	U		0.050	0.10	U	GAM
Europium 152	14683-23-9	U		0.11	0.10	U	GAM
Europium 154	15585-10-1	U		0.20	0.10	U	GAM
Europium 155	14391-16-3	U		0.095	0.10	U	GAM

100 F Area - Full Protocol

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10/31/01

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Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>09/11/01</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H1463

R108095-13

B12KX7

DATA SHEET

SDG <u>7056</u>	Client/Case no <u>Hanford</u>	SDG <u>H1463</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R108095-13</u>	Client sample id <u>B12KX7</u>	
Dept sample id <u>7056-013</u>	Location/Matrix <u>UPR-100-F-2</u>	<u>SOLID</u>
Received <u>08/21/01</u>	Collected/Weight <u>08/16/01 07:24</u>	<u>1138 g</u>
% solids <u>96.4</u>	Custody/SAF No <u>B00-030-010</u>	<u>B00-030</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Cobalt 60	10198-40-0	U		<u>0.054</u>	0.050	U	GAM
Cesium 137	10045-97-3	U		<u>0.051</u>	0.10	U	GAM
Europium 152	14683-23-9	U		<u>0.13</u>	0.10	U	GAM
Europium 154	15585-10-1	U		<u>0.19</u>	0.10	U	GAM
Europium 155	14391-16-3	U		<u>0.13</u>	0.10	U	GAM

100 F Area - Full Protocol

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10/31/01

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Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>09/11/01</u>

000023

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H1463

R108095-14

B12KX8

DATA SHEET

SDG <u>7056</u>	Client/Case no <u>Hanford</u>	SDG <u>H1463</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 630</u>	
Lab sample id <u>R108095-14</u>	Client sample id <u>B12KX8</u>	
Dept sample id <u>7056-014</u>	Location/Matrix <u>UPR-100-F-2</u>	<u>SOLID</u>
Received <u>08/21/01</u>	Collected/Weight <u>08/16/01 06:40</u>	<u>1385 g</u>
# solids <u>100.0</u>	Custody/SAF No <u>B00-030-010</u>	<u>B00-030</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Cobalt 60	10198-40-0	U		0.017	0.050	U	GAM
Cesium 137	10045-97-3	U		0.014	0.10	U	GAM
Europium 152	14683-23-9	U		0.037	0.10	U	GAM
Europium 154	15585-10-1	U		0.056	0.10	U	GAM
Europium 155	14391-16-3	U		0.046	0.10	U	GAM

100 F Area - Full Protocol

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CCCCCI

Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>09/11/01</u>

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

000025

1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H1463 was composed of fourteen solid (soil) samples designated under SAF No. B00-030 with a Project Designation of: 100 F Area - Full Protocol.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to BHI via e-Fax on September 11, 2001.

2.0 ANALYSIS NOTES

2.1 Gamma Spectroscopy Analyses

No problems were encountered during the course of the analyses.

Case Narrative Certification Statement

"I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data obtained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

Melissa Mannion
Melissa C. Mannion
Program Manager

7/21/01
Date

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			B00-030-010	Page 3 of 3
Collector Renee Nielsen	Company Contact Mike Stankovich	Telephone No. 531-7620	Project Coordinator TRENT, SJ	Price Code 8L Air Quality <input type="checkbox"/>	Data Turnaround 21 Days	
Project Designation 100 F Area - Full Protocol	Sampling Location UPR-100-F-2	H1463 (7056)	SAF No. B00-030			
cc Chest No. Sml-510	Field Logbook No. EL-1535-1	COA RUPRF22600	Method of Shipment FED EX			
Shipped To TMI/RECRA EBERLINE	Offsite Property No. ACI10353	Bill of Lading/Air Bill No. 42387954 - 16494				
POSSIBLE SAMPLE HAZARDS/REMARKS Possible rad contamination		Preservation	Note			
		Type of Container	P			
Special Handling and/or Storage		No. of Container(s)	1			
		Volume	1000mL			
SAMPLE ANALYSIS				Sediment (f) in Special Instructions.		
Sample No.	Matrix *	Sample Date	Sample Time			
B12KX5	SOIL	8-16-01	0900	X		C1
B12KX6	SOIL	8-16-01	0852	X		C2
B12KX7	SOIL	8-16-01	0724	X		
B12KX8	SOIL	8-16-01	0640	X		
CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS		
Relinquished By <i>Renee Nielsen Shift</i>	Date/Time 8-16-01 0725	Received By <i>J. R. Thoron</i>	Date/Time 8-16-01 0725	(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)		
Relinquished By <i>Prepared from</i>	Date/Time 8-16-01 0725	Received By <i>J. R. Thoron</i>	Date/Time 8-16-01 0725	<i>627P1 for Shipping</i>		
Relinquished By <i>J. R. Thoron</i>	Date/Time 8-20-01 0900	Received By <i>FED EX</i>	Date/Time 8-20-01 0900			
Relinquished By <i>J. R. Thoron</i>	Date/Time 8-21-01 0930	Received By <i>J. R. Corso</i>	Date/Time 8-21-01 0930			
Relinquished By <i>J. R. Corso</i>	Date/Time 8-21-01 0930	Received By <i>J. R. Corso</i>	Date/Time 8-21-01 0930	Samples stored in Ref. # ZC at the 3728 Shipping Facility on 8-16-01.		
Relinquished By	Date/Time	Received By	Date/Time	Collector not available to relinquish samples on 8-22-01 for shipment.		
LABORATORY SECTION	Received By	Title			RT	Date/Time
FINAL SAMPLE DISPOSITION	Disposed Method	Disposed By				Date/Time

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				B00-030-010	
Collector Renee Nickson	Company Contact Mike Stankovich	Telephone No. 531-7620	Project Coordinator TRENT, SJ	Price Code 8L	Date Turnaround 21 Days		
Project Designation 100 F Area - Full Protocol	Sampling Location UPR-100-F-2	H1463 (7056)	SAF No. B00-030	Air Quality <input type="checkbox"/>			
Ice Chest No. 21830-01 AD SMI - 510	Field Logbook No. EL-1535-1	COA RUPPR22600	Method of Shipment FED EX				
Shipped To TMA/RECRA	Offsite Property No. AD10353	Bill of Lading/Air Bill No. 42357954 - 6494					
POSSIBLE SAMPLE HAZARDS/REMARKS Possible rad contamination		Preservation	No.				
		Type of Container	P				
Special Handling and/or Storage		No. of Container(s)	1				
		Volume	1000mL				
				See item (1) in Special Instructions.			
SAMPLE ANALYSIS							
Sample No.	Matrix *	Sample Date	Sample Time				
B12100	SOIL	8-16-01	0824	X			B6
B12101	SOIL	8-16-01	0833	X			B7
B12102	SOIL	8-16-01	0841	X			B8
B12103	SOIL	8-16-01	0915	X			C9
B12104	SOIL	8-16-01	0909	X			C10
CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS			
Relinquished By P. J. Nickson	Date/Time 8/16/01 17:25	Received By J. D. O'Neal	Date/Time 8/16/01 17:25	(1) General Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)			
Relinquished By R. M. Stankovich	Date/Time 8/20/01 8:20 AM	Received By R. Thorpe	Date/Time 8/20/01	B127R1 for Shipping			
Relinquished By R. Thorpe	Date/Time 8/20/01	Received By FEDEX	Date/Time 8-20-01				
Relinquished By J. D. O'Neal	Date/Time 8-21-01 9:31 AM	Received By J. R. Gandy	Date/Time 8-21-01	Samples stored in Ref. # 71 at the 3728 Shipping Facility on 8/21/01.			
Relinquished By	Date/Time	Received By	Date/Time	Collector not available to relinquish samples on 8/20/01 for shipment.			
Relinquished By	Date/Time	Received By	Date/Time	8-20-01 RT			
LABORATORY SECTION	Received By	Title				Date/Time	
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By				Date/Time	

BH-EE-011 (10/99)

S=Soil
 SL=Sediment
 SD=Solid
 S=Sludge
 W=Water
 O=Oil
 A=Air
 DS=Dust Solid
 DL=Dust Liquid
 T=Toxins
 DR=Wipes
 L=Liquid
 V=Vegetation
 X=Other

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				B00-030-010	Page 1 of 2
Collector Renee Nelson	Company Contact Mike Stankovich	Telephone No. 531-7620	Project Coordinator TRENT, SJ	Price Code 8L	Data Turnaround 21 Days		
Project Designation 100 F Area - Full Protocol	Sampling Location UPR-100-F-2	H1463 (7056)	SAF No. B00-030	Air Quality <input type="checkbox"/>			
Ice Chest No. SMA + RT 8200 A SMA + 548 Sm1-SID	Field Logbook No. EL-1535-1	COA RUPRF22600	Method of Shipment FED EX				
Shipped To TMA/RCRA EBELINE	Office Property No. A010353	Bill of Lading/Air Bill No. 42357954-6494					
POSSIBLE SAMPLE HAZARDS/REMARKS Possible rad contamination		Preservation	None				
		Type of Container	P				
		No. of Container(s)	1				
		Volume	1000mL				
Special Handling and/or Storage		See Item (1) in Special Instructions.					
		SAMPLE ANALYSIS					
Sample No.	Matrix *			Sample Date	Sample Time		
B12KW5	SOIL	8-16-01	0724	X			A1
B12KW6	SOIL	8-16-01	0733	X			A2
B12KW7	SOIL	8-16-01	0748	X			A3
B12KW8	SOIL	8-16-01	0754	X			A4
B12KW9	SOIL	8-16-01	0810	(B5
CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS			
Relinquished By Renee Nelson	Date/Time 8-16-01 1724	Received By R. Hansen	Date/Time 8-16-01 1724	(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)			
Relinquished By/Renewed By/From Date/Time Renee Nelson 8-16-01 1724 8-20-01	Received By R. Hansen	Date/Time 8-20-01	B127P1 for Shipping				
Relinquished By/Renewed By/From Date/Time Renee Nelson 8-20-01	Received By FED EX	Date/Time 8-20-01	Samples stored in Ref. # ZC at the 3728				
Relinquished By Tech Co.	Date/Time 8-21-01 9:30	Received By APM Inc. Lab Center	Date/Time 8-21-01	Shipping Facility on 8-16-01.			
Relinquished By	Date/Time	Received By	Date/Time	Collector not available to relinquish samples on 8-16-01 for shipment.			
Relinquished By	Date/Time	Received By	Date/Time	RJ 8-20-01			
LABORATORY SECTION	Received By	Title		Date/Time			
FINAL SAMPLE DISPOSITION	Disposal Method	Disputed By		Date/Time			

Appendix 5
Data Validation Supporting Documentation

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RADIOCHEMICAL DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 10GF UPR-160-F-2				DATA PACKAGE: H1463	
VALIDATOR: TLI	LAB: Eberhart			DATE: 10/25/01	
CASE:		SDG: H1463			
ANALYSES PERFORMED					
<input type="checkbox"/> Gross Alpha/Beta	<input type="checkbox"/> Strontium-89	<input type="checkbox"/> Technetium-99	<input type="checkbox"/> Alpha Spectroscopy	<input checked="" type="checkbox"/> Gamma Spectroscopy	
<input type="checkbox"/> Total Uranium	<input type="checkbox"/> Radium-22	<input type="checkbox"/> Tritium	<input type="checkbox"/>		
SAMPLES/MATRIX 501					
B12KWS B12KWL B12KW7 B12KWT B0FW9					
B12KX0 B12KX1 B12KX2 B12KX3 B12KX4					
B12KX5 B12KX6 B12KX7 B12KX8					

Technical verification forms present? Yes No N/A

Comments: _____

2. Initial Calibration N/A

Instruments/detectors calibrated within
one year of sample analysis? Yes No N/A

Initial calibration acceptable? Yes No N/A

Standards NIST traceable? Yes No N/A

Standards Expired? Yes No N/A

Comments:

Digitized by srujanika@gmail.com

Digitized by srujanika@gmail.com

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3. Continuing Calibration N/A

Calibration checked within one week of sample analysis? . . . Yes No N/A

Calibration check acceptable? Yes No N/A

Calibration check standards NIST traceable? Yes No N/A

Calibration check standards expired? Yes No N/A

Comments: _____

4. Blanks N/A

Method blank analyzed? Yes No N/A

Method blank results acceptable? Yes No N/A

Analytes detected in method blank? Yes No N/A

Field blank(s) analyzed? Yes No N/A

Field blank results acceptable? Yes No N/A

Analytes detected in field blank(s)? Yes No N/A

Transcription/Calculation Errors? Yes No N/A

Comments: _____

5. Matrix Spikes N/A

Matrix spike analyzed? Yes No N/A

Spike recoveries acceptable? Yes No N/A

Spike source traceable? Yes No N/A

Spike source expired? Yes No N/A

Transcription/Calculation Errors? Yes No N/A

Comments: _____
 :

AKR 000002

6. Laboratory Control Samples N/ALCS analyzed? Yes No N/ALCS recoveries acceptable? Yes No N/ALCS traceable? Yes No N/ATranscription/Calculation Errors? Yes No N/AComments: _____

_____7. Chemical Recovery N/AChemical carrier added? Yes No N/AChemical recovery acceptable? Yes No N/AChemical carrier traceable? Yes No N/AChemical carrier expired? Yes No N/ATranscription/Calculation errors? Yes No N/AComments: _____

_____8. Duplicates N/ADuplicates Analyzed? Yes No N/ARPD Values Acceptable? Yes No N/ATranscription/Calculation Errors? Yes No N/AComments: _____

000023

[Signature]

9. Field QC Samples N/A
 Field duplicate sample(s) analyzed? Yes No N/A
 Field duplicate RPD values acceptable? Yes No N/A
 Field split sample(s) analyzed? Yes No N/A
 Field split RPD values acceptable? Yes No N/A
 Performance audit sample(s) analyzed? Yes No N/A
 Performance audit sample results acceptable? Yes No N/A

Comments: _____

10. Holding Times

Are sample holding times acceptable? Yes No N/A

Comments: _____

11. Results and Detection Limits (Levels D & E) N/A

Results reported for all required sample analyses? Yes No N/A
 Results supported in raw data? Yes No N/A
 Results Acceptable? Yes No N/A
 Transcription/Calculation errors? Yes No N/A
 MDA's meet required detection limits? Yes No N/A
 Transcription/calculation errors? Yes No N/A

Comments: see narrative

APR 2000 CCI

Appendix 6
Additional Documentation Requested by Client

000025

EBERLINE SERVICES/RICHMOND
SAMPLE DELIVERY GROUP #1463

R108095-17

B12002

DUPLICATE

<u>SDG 7056</u>	Client/Case no <u>Hanford</u>		<u>SDG H1463</u>
Contact <u>Melissa C. Marion</u>	Case no <u>No. 630</u>		
DUPLICATE			
Lab sample id <u>R108095-17</u>	ORIGINAL	Client sample id <u>B12002</u>	
Dept sample id <u>7056-017</u>	Dept sample id <u>7056-008</u>	Location/Matrix <u>UPR-100-F-2</u>	<u>SOLID</u>
% solids <u>99.1</u>	Received <u>08/21/01</u>	Collected/Weight <u>08/16/01 08:41</u>	<u>1555 g</u>
	% solids <u>99.1</u>	Custody/SAF No <u>B00-030-010</u>	<u>B00-030</u>

ANALYTE	DUPLICATE	2 σ ERR	MDA	RDL	QUALI-	TEST	ORIGINAL	2 σ ERR	MDA	QUALI-	RPD	3 σ	PROT
	pCi/g	(COUNT)	pCi/g	pCi/g	FIERS		pCi/g	(COUNT)	pCi/g	FIERS	%	TOT	LIMIT
Cobalt 60	U		<u>0.052</u>	0.050	U	GAM	U		0.049	U	-		
Cesium 137	U		<u>0.052</u>	0.10	U	GAM	U		0.047	U	-		
Europium 152	U		<u>0.22</u>	0.10	U	GAM	0.138	0.062	0.085		46	194	
Europium 154	U		<u>0.20</u>	0.10	U	GAM	U		<u>0.15</u>	U	-		
Europium 155	U		<u>0.096</u>	0.10	U	GAM	U		0.082	U	-		

100 F Area - Full Protocol

QC-DUP# 39487

DUPLICATES

Page 1

SUMMARY DATA SECTION

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Lab fd <u>JWNC</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DUP-SUP</u>
Version <u>3.06</u>
Report date <u>09/11/01</u>

EBERLINE SERVICES/RICHMOND
SAMPLE DELIVERY GROUP H1463

R108095-15

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7056	Client/Case no Hanford	SDG H1463
Contact Melissa C. Mannion	Case no No. 630	
Lab sample id R108095-15	Client sample id Lab Control Sample	
Dept sample id 7056-015	Material/Matrix	SOLID
	SAF No 800-030	

ANALYTE	RESULT pCi/g	2 σ ERR (COUNT)	NDA pCi/g	IDL pCi/g	QUALI- FIERS	TEST	ADDED pCi/g	2 σ ERR pCi/g	REC %	3 σ LMTS (TOTAL)	PROTOCOL
Cobalt 60	1.28	0.075	0.030	0.050	GAM		1.21	0.048	106	74-126	80-120
Cesium 137	1.46	0.071	0.047	0.10	GAM		1.37	0.055	107	74-126	80-120

100 F Area - Full Protocol

QC-LCS #39485

LAB CONTROL SAMPLES

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000007

Lab id TWANG
Protocol Hanford
Version Ver 1.0
Form DPD-LCS
Version 3.06
Report date 09/11/01

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H1463

R108095-16

Method Blank

METHOD BLANK

SDG 7056
Contact Melissa C. Mannion

Client/Case no Hanford
Contract No. 630

Lab sample id R108095-16
Dept sample id 7056-016

Client sample id Method Blank
Material/Matrix SOLID
SAF No B00-030

ANALYTE	CAS NO	RESULT pCi/g	2 σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Cobalt 60	10198-40-0	U		0.021	0.050	U	GAM
Cesium 137	10045-97-3	U		0.020	0.10	U	GAM
Europium 152	14683-23-9	U		0.045	0.10	U	GAM
Europium 154	15585-10-1	U		0.050	0.10	U	GAM
Europium 155	14391-16-3	U		0.038	0.10	U	GAM

100 F Area - Full Protocol

QC-BLANK #39486

METHOD BLANKS

Page 1

SUMMARY DATA SECTION

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000003

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form EVD-DS
Version 3.06
Report date 09/11/01